WHAT IS CLAIMED IS:

1. A computer-implemented method for separating gingiva from a tooth, comprising:

defining a cutting surface along the gingiva; and

applying the cutting surface to the tooth to separate the gingiva from the tooth.

2. The method of claim 1, wherein the cutting surface is curved.

3. The method of claim 1, wherein the cutting surface is expressed as a function.

4. The method of claim 1, wherein the cutting surface is expressed as a spline function and a quadratic function.

5. The method of claim 1, wherein the cutting surface is expressed as a spline function and a parabolic function.

6. The method of claim 1, wherein the cutting surface is interactively adjusted.

7. The method of claim 4, wherein the interactive adjustment of the cutting surface modifies a function defining the cutting surface.

8. The method of claim 4, further comprising interactively highlighting the separated portion.

9. The method of claim 8, further comprising interactively highlighting the border of the separated portion.

10. The method of claim 1, wherein the cutting surface is defined by specifying a basis for the tooth.

11. The method of claim 1, further comprising finding a gingival line separating a tooth surface and a gingiva.

12. The method of claim 11, further comprising finding the high curvature location on the tooth surface.

13. The method of claim 11, further comprising fitting a spline to the gingival line.

14. The method of claim 1, wherein the cutting surface further comprises a plurality of surfaces.

15. The method of claim 14, wherein the root of the tooth is modeled as a parabolic surface below a gingival line.

16. The method of claim 14, further comprising defining an enclosing surface to enclose the crown of the tooth.

17. The method of claim 14, further comprising:

displaying the surface specified with a plurality of nodes;

adjusting one or more nodes to modify the surface; and

applying the surface to separate the gingiva from the tooth.

18. The method of claim 17, further comprising providing a handle to adjust each orientation of the cutting shape.

19. The method of claim 17, wherein adjusting one or more nodes further comprises moving one or more nodes.

20. The method of claim 17, wherein the cutting surface is formed using a function in a cylindrical coordinate system.

21. A system for separating gingiva from a tooth, comprising:

means for defining a cutting surface along the gingiva; and

means for applying the cutting surface to the tooth to separate the gingiva from the tooth.

22 . A computer program, residing on a tangible storage medium, for use in separating gingiva from a computer model of a tooth, the program comprising executable instructions operable to cause a computer to:

define a cutting surface along the gingiva; and

apply the cutting surface to the tooth to separate the gingiva from the tooth in a single cut.

23. A computer program, residing on a tangible storage medium, for use in separating gingiva from a computer model of a tooth, the program comprising executable instructions operable to cause a computer to:

define a cutting surface along the gingiva, wherein the cutting surface is expressed as a spline function and a quadratic function; and

apply the cutting surface to the tooth to separate the gingiva from the tooth in a single cut.

24. A computer, comprising:

a processor;

a data storage device coupled to the processor, the data storage device containing code for use in separating gingiva from a computer model of a tooth, the program comprising executable instructions operable to cause a computer to:

define a cutting surface along the gingiva, wherein the cutting surface is expressed as a spline function and a quadratic function and wherein the cutting surface further comprises a plurality of surfaces and wherein the root of the tooth is modeled as a parabolic surface below a gingival line; and

apply the cutting surface to the tooth to separate the gingiva from the tooth.

25. The system of claim 24, further comprising instructions to define an enclosing surface to enclose the crown of the tooth.

26. A computer-implemented method for separating tooth from gingiva, comprising:

defining a cutting surface along the gingiva; and

applying the cutting surface to the tooth to separate the gingiva and reconstruct the root for the tooth.